

Research Review

Path Planning

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References

- 1: P.E. Hart, N.J. Nilsson, and B. Raphael, A formal basis for the heuristic determination of minimum cost paths, 1968
- 2: A. Nash, K. Daniel, S. Koenig, and A. Felner, Theta*: Any-angle path planning on grids, 2007
- 3: Aleksandr I. Panov, Konstantin S. Yakovlev, and Roman Suvorov, Grid Path Planning with Deep Reinforcement Learning: Preliminary Results, 2017

In this review, we focused on a general term of planning topic especially path planning. Path planning problem has been a topic of research since 60s. We reviewed 3 different research papers focusing this topic from different eras. In [3], the authors presented the use of A* search algorithm to tackle path planning problem and showed how it outperform other algorithms in conjunction with using appropriate cost estimation (heuristics). The selection of heuristics, therefore, permits one to choose a desirable compromise between admissibility, heuristic effectiveness, and computation efficiency [3].

Alex, Kenny and Sven [2] presented the modified version of A* search algorithm namely Basic Theta* and AP Theta* that are able to improve the optimality of the found solution. In this era, most researches in planning focused on improving solution and complexity performance of the available algorithms such as A*. Then begin the revolutionary era of the modern deep learning which enable the term to be applied to many areas, including planning. Aleksandr et al in [1] attempted to experiment in the application of deep reinforcement learning in path planning. The result of this experiment provides several interesting aspects. While the deep learning approach cannot be seen as a successor alternative to many established planning algorithms, the application of various deep neural network architectures to path finding tasks is a perspective line of research [1].